

CLAIMS

WHAT IS CLAIMED IS:

- 1 1. A method of coupling a photonic component with a waveguide comprising:
 - 2 positioning the photonic component against the waveguide; and
 - 3 aligning the photonic component with markings that have been
 - 4 lithographically-placed on a surface of the waveguide.
- 1 2. The method of claim 1, wherein the photonic component is a fiber optic
2 bundle.
- 1 3. The method of claim 2 further comprising:
 - 2 aligning outermost optical fibers of the fiber optic bundle with the markings
 - 3 on the surface of the waveguide.
- 1 4. The method of claim 3 further comprising:
 - 2 bonding the fiber optic bundle to the waveguide.
- 1 5. The method of claim 1, wherein the photonic component is a second
2 waveguide.
- 1 6. A method of aligning a fiber optic bundle with a waveguide comprising:

2 using a lithographic process to place a marking on a surface of the
3 waveguide, the marking indicative of an optical channel within the
4 waveguide;
5 positioning the fiber optic bundle against the waveguide based on the
6 marking; and
7 adjusting the fiber optic bundle until alignment is achieved.

- 1 7. The method of claim 6 further comprising:
 - 2 using the lithographic process to place a second marking on the surface of
 - 3 the waveguide, the second marking indicative of a second optical
 - 4 channel within the waveguide, wherein the positioning of the fiber
 - 5 optic bundle against the waveguide is also based on the second
 - 6 marking.
- 1 8. The method of claim 7, wherein the lithographic process uses an etch to place
- 2 the first and second markings.
- 1 9. The method of claim 7, wherein the lithographic process uses an ink to place
- 2 the first and second markings.
- 1 10. The method of claim 7, wherein the lithographic process deposits a layer of
- 2 material that is distinguishable by the human eye to place the first and second markings.

1 11. The method of claim 7, wherein the marking is directly above the optical
2 channel.

1 12. The method of claim 7, wherein the marking is lateral to the optical channel.

1 13. The method of claim 7, wherein the positioning of the fiber optic bundle
2 against the waveguide is also based on alignment markings on the fiber optic bundle.

1 14. The method of claim 13 further comprising:
2 applying an epoxy between the fiber optic bundle and the waveguide.

1 15. A waveguide comprising:
2 a first optical channel within the waveguide; and
3 a first lithographically-defined marking on a surface of the waveguide
4 indicative of the first optical channel within the waveguide.

1 16. The waveguide of claim 15 further comprising:
2 a second optical channel within the waveguide; and
3 a second lithographically-defined marking on the surface of the
4 waveguide indicative of the second optical channel within the
5 waveguide.

1 17. The waveguide of claim 16, wherein the first lithographically-defined
2 marking and the second lithographically-defined marking are directly above the first
3 optical channel and the second optical channel, respectively.

1 18. The waveguide of claim 17, wherein the first lithographically-defined
2 marking and the second lithographically-defined marking are at an edge of the
3 waveguide.

1 19. The waveguide of claim 18, wherein the waveguide comprises glass.

1 20. The waveguide of claim 18, wherein the waveguide comprises silicon.

1 21. The waveguide of claim 18, wherein the first optical channel and the
2 second optical channel are on opposite sides of the waveguide.